FIG. 1

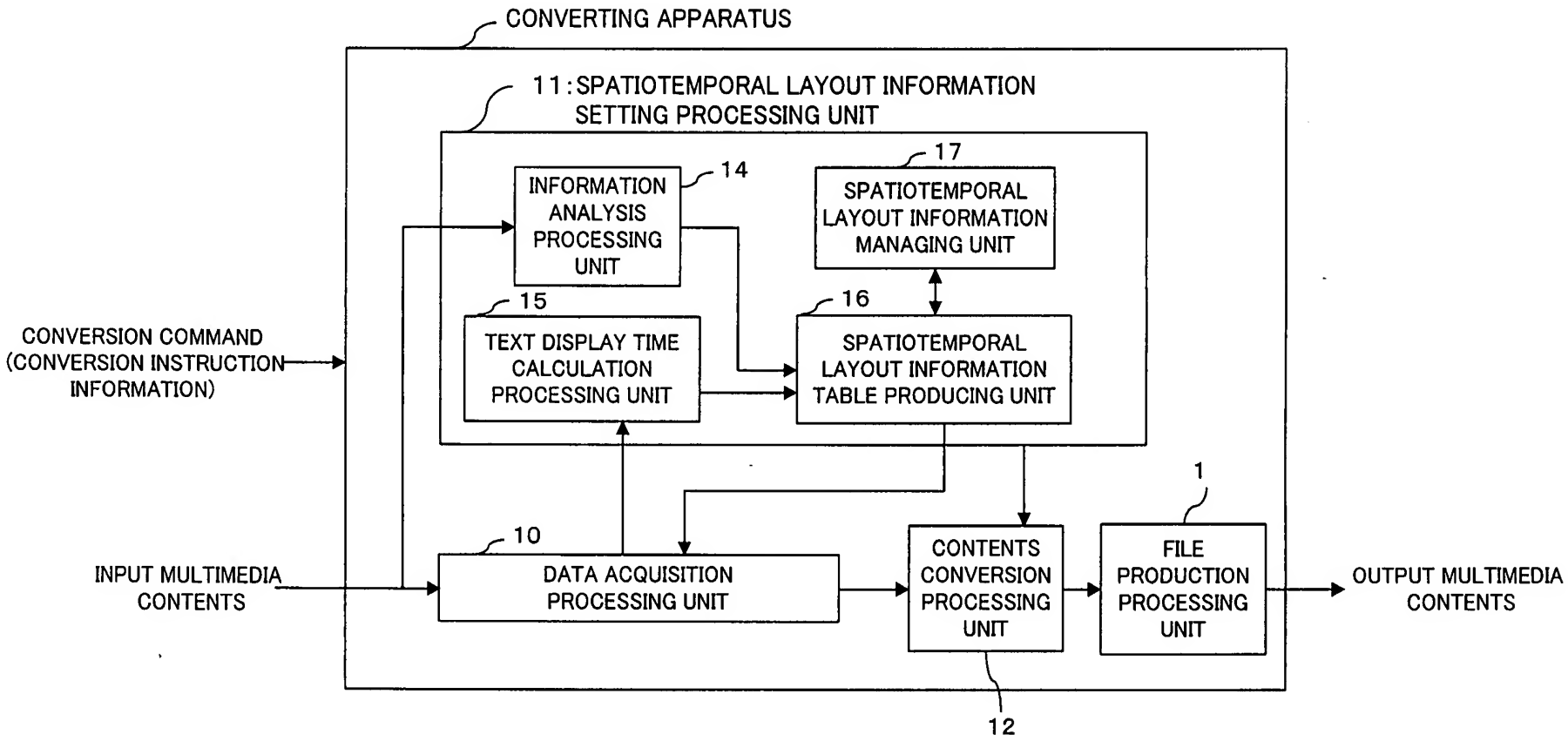

CONVERTING APPARATUS
11 : SPATIOTEMPORAL LAYOUT INFORMATION SETTING PROCESSING UNIT
INFORMATION ANALYSIS PROCESSING UNIT
14
SPATIOTEMPORAL LAYOUT INFORMATION MANAGING UNIT
17
TEXT DISPLAY TIME CALCULATION PROCESSING UNIT
15
SPATIOTEMPORAL LAYOUT INFORMATION TABLE PRODUCING UNIT
16
CONVERSION COMMAND (CONVERSION INSTRUCTION INFORMATION)
INPUT MULTIMEDIA CONTENTS
10
DATA ACQUISITION PROCESSING UNIT
CONTENTS CONVERSION PROCESSING UNIT
FILE PRODUCTION PROCESSING UNIT
1
OUTPUT MULTIMEDIA CONTENTS
12

FIG. 2

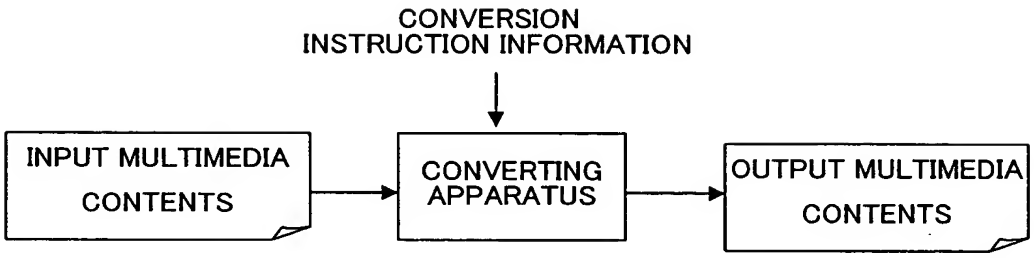

CONVERSION
INSTRUCTION INFORMATION
INPUT MULTIMEDIA
CONTENTS
CONVERTING
APPARATUS
OUTPUT MULTIMEDIA
CONTENTS

FIG. 3(A)

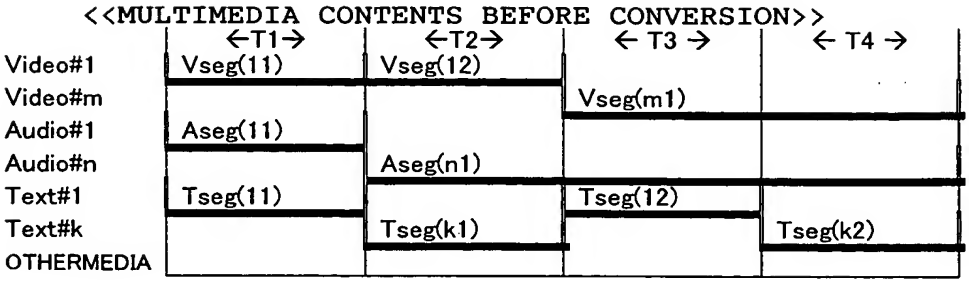


FIG. 3(B)

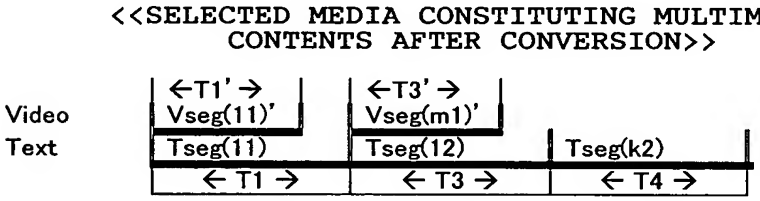


FIG. 3(C)

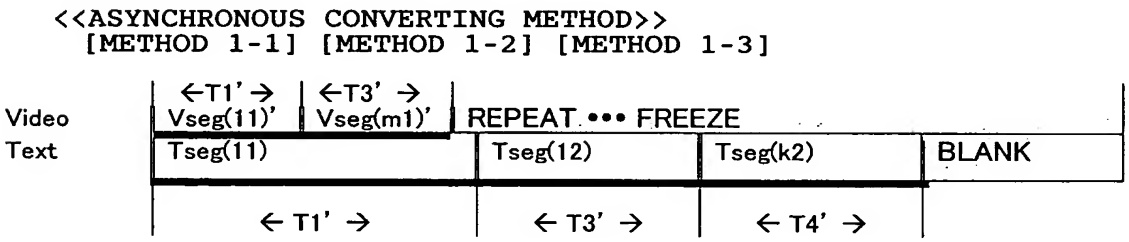


FIG. 3(D)

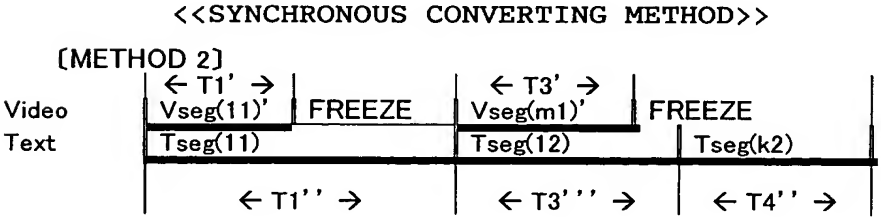


FIG. 4

```
<smil>
<head>
</head>
<body>
  <seq>
    <par>
      <video id="vseg1" src="v1.mpg" clip-begin="10s" clip-end="20s"/>
      <audio id="aseg1" src="a1.mpg" clip-begin="40s" clip-end="50s"/>
      <text id="tseg1" dur="10s" src="tx1.html"/>
    </par>

    <par>
      <seq>
          <par>
            <video id="vseg2" src="v2.mpg" clip-begin="0s" clip-end="10s"/>
            <text id="tseg2" dur="10s" src=tx2.html"/>
          </par>
          <par>
            <video id="vseg3" src="v3.mpg" clip-begin="20s" clip-end="40s"/>
            <seq>
              <text id="tseg3" dur="10s" src=tx3.html"/>
              <text id="tseg4" dur="10s" src=tx4.html"/>
            <seq>
          </par>
      </seq>
      <audio id="aseg2" src="a2.mpg" clip-begin="10s" clip-end="40s"/>
    </par>
  </seq>
</body>
</smil>
```

①

②

③

④

FIG. 5(A)

FIG. 5(B)

FIG. 5(C)

FIG. 5(D)

FIG. 5(E)

FIG. 5(F)

FIG. 5(G)

FIG. 5(H)

FIG. 5(I)

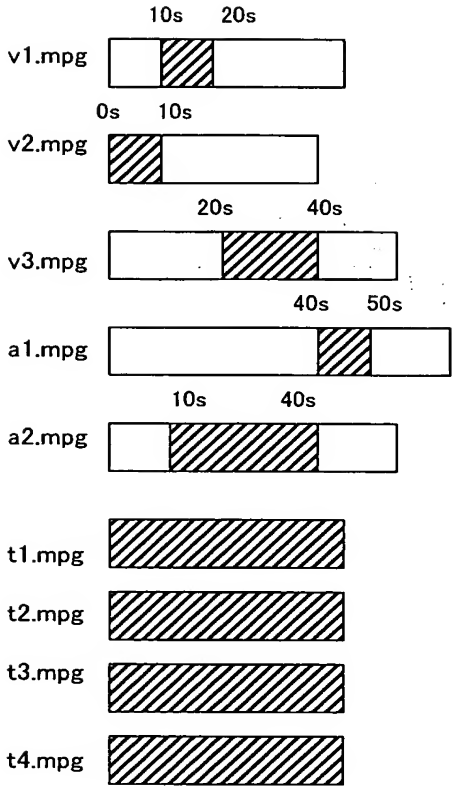


FIG. 6

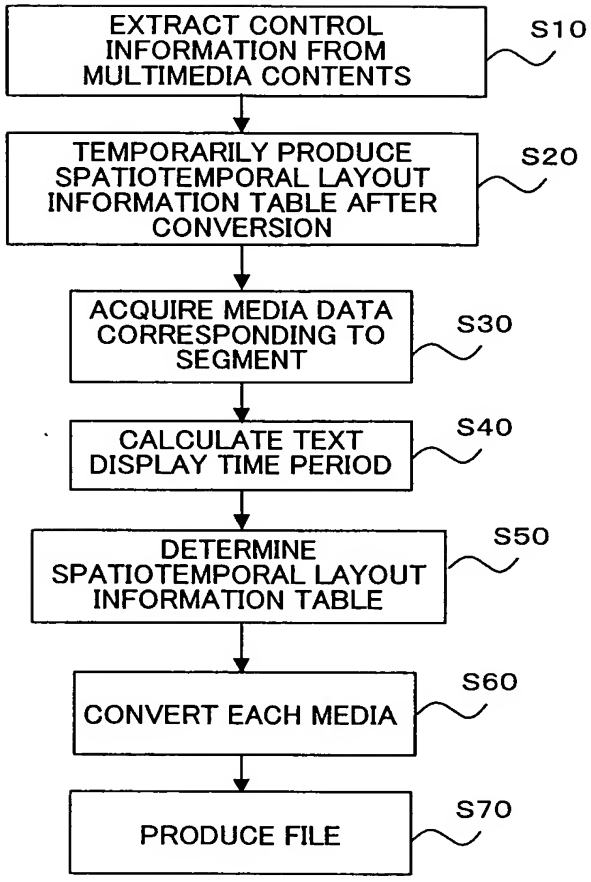

EXTRACT CONTROL INFORMATION FROM MULTIMEDIA CONTENTS
S10
TEMPORARILY PRODUCE SPATIOTEMPORAL LAYOUT INFORMATION TABLE AFTER CONVERSION
S20
ACQUIRE MEDIA DATA CORRESPONDING TO SEGMENT
S30
CALCULATE TEXT DISPLAY TIME PERIOD
S40
DETERMINE SPATIOTEMPORAL LAYOUT INFORMATION TABLE
S50
CONVERT EACH MEDIA
S60
PRODUCE FILE
S70

FIG. 7(A)

OUTPUT FILE FORMAT INFORMATION

ATTRIBUTE	VALUE
FILE FORMAT	3GPP TS.26.234 V.5.1.0

FIG. 7(B)

OUTPUT PRESENTATION FORM INFORMATION

ATTRIBUTE	VALUE
PRESENTATION FORM	[METHOD 1-1] [METHOD 1-2] [METHOD 1-3] [METHOD 2]

FIG. 7(C)

VIDEO RENDERING REGION TRANSITION ORDER INFORMATION

TRANSITION ORDER	RENDERING REGION ID
1	VRegionID1
2	VRegionID2
3	VRegionID3
4	VRegionID4
...	...

FIG. 7(D)

TEXT RENDERING REGION TRANSITION ORDER INFORMATION

TRANSITION ORDER	RENDERING REGION ID
1	TRegionID1
2	TRegionID2
3	TRegionID3
4	TRegionID4
...	...

FIG. 7(E)

RENDERING REGION INFORMATION

ATTRIBUTE	VALUE
ID	VRegionID1
DISPLAY MEDIA ASSORTMENT	VIDEO
DISPLAY POSITION	(0,0)
DISPLAY REGION	176x144
MEDIA DISPLAY FORM	VIDEO DISPLAY FORM INFORMATION
ID	TRegionID1
DISPLAY MEDIA ASSORTMENT	TEXT
DISPLAY POSITION	(-12,144)
DISPLAY REGION	200x10
MEDIA DISPLAY FORM	TEXT DISPLAY FORM INFORMATION
ID	VRegionID2
...	...

FIG. 7(F)

VIDEO DISPLAY FORM INFORMATION

ATTRIBUTE	VALUE
ENCODING METHOD	MPEG-4 Video SP@L0
FRAME RATE	MAXIMUM OF 15 fps
BIT RATE	MAXIMUM OF 64 kbps

FIG. 7(G)

TEXT DISPLAY FORM INFORMATION

ATTRIBUTE	VALUE
DATA TYPE	3GPP TimedText
FONT NAME	Serif
FONT SIZE	9pt
CHARACTER SPACING	1pt
PITCH	FIXED
ORNAMENT METHOD	SCROLL INFORMATION

FIG. 7(H)

SCROLL INFORMATION

ATTRIBUTE	VALUE
DIRECTION	LEFT → RIGHT
SPEED	30pixcel/sec

FIG. 8(A)

VIDEO RENDERING REGION #1

segID	PLAYING START TIME	PLAYING TIME PERIOD	ENTITY	START TIME	END TIME
1	0s	10s	v1.mpg	10s	20s
2	10	10s	v2.mpg	0s	10s
3	20	20s	v3.mpg	20s	40s

FIG. 8(B)

VIDEO RENDERING REGION #n

segID	PLAYING START TIME	PLAYING TIME PERIOD	ENTITY	START TIME	END TIME
...	...	...	...	...	...

FIG. 8(C)

AUDIO RENDERING REGION #1

segID	PLAYING START TIME	PLAYING TIME PERIOD	ENTITY	START TIME	END TIME
1	0s	10s	a1.mpg	40s	50s
2	10	30s	a2.mpg	10s	40s

FIG. 8(D)

AUDIO RENDERING REGION #m

segID	PLAYING START TIME	PLAYING TIME PERIOD	ENTITY	START TIME	END TIME
...	...	...	...	...	...

FIG. 8(E)

TEXT RENDERING REGION #1

segID	PLAYING START TIME	PLAYING TIME PERIOD	ENTITY	START TIME	END TIME
1	0s	10s	t1.html	–	–
2	10	10s	t2.html	–	–
3	20	10s	t3.html	–	–
4	30	10s	t4.html	–	–

FIG. 8(F)

TEXT RENDERING REGION #k

segID	PLAYING START TIME	PLAYING TIME PERIOD	ENTITY	START TIME	END TIME
...	...	...	...	...	...

FIG. 9(A)

SPATIOTEMPORAL LAYOUT INFORMATION TABLE (METHOD 1)

RENDERING REGION ID	MEDIA ASSORTMENT	SEGMENT	PLAYING TIME	PLAYING TIME PERIOD	EFFECT INSTRUCTION INFORMATION
VRegionID1	VIDEO	Vseg#1···Vseg#s	0	TMP	REPEATED
TRegionID1	TEXT	Tseg#1···Tseg#t	0	DurOf (Tseg#1 · · · Tseg#t)	FREEZE
···	···	···		···	···

FIG. 9(B)

SEGMENT INFORMATION TABLE

SEGMENT ID	MEDIA ASSORTMENT	PLAYING TIME PERIOD	LOCATION OF DATA	START TIME	END TIME
Vseg#1	VIDEO	V#1_ed-v#1_st	URLv1	v#1_st	v#1_ed
···	···	···	···	···	···
Vseg#s	VIDEO	V#s_ed-v#s_st	URLvs	v#s_st	v#s_ed
Tseg#1	TEXT	DurOf(Tseg#1)	URLt1	—	—
···	···	···	···	···	···
Tseg#t	TEXT	DurOf(Tseg#t)	URLts	—	—
OTHERS	···	···	···	···	···

FIG. 10(A)

SPATIOTEMPORAL LAYOUT INFORMATION TABLE (METHOD 2)

RENDERING REGION ID	MEDIA ASSORTMENT	SEGMENT	PLAYING TIME	PLAYING TIME PERIOD
VRegionID1	VIDEO	Vseg#1 · · · Vseg#s	0	DurOf(Vseg#1 · · · Vseg#s)
TRegionID1	TEXT	Tseg#1 · · · Tseg#s	0	DurOf(Tseg#1 · · · Tseg#s)
OTHERS	···	···	···	···

FIG. 10(B)

SEGMENT INFORMATION TABLE

SEGMENT ID	MEDIA ASSORTMENT	PLAYING TIME PERIOD	EFFECT	LOCATION OF ENTITY	START TIME	END TIME
Vseg#1	VIDEO	Max(DurOf(Tseg#1) ,(v#1_ed−v#1_st))	FREEZE	URLv1	v#1_st	v#1_ed
···	···	···	···	···	···	···
Vseg#s	VIDEO	Max(DurOf(Tseg#s) ,(v#s_ed−v#s_st))	FREEZE	URLvs	v#s_st	v#s_ed
Tseg#1	TEXT	Max(DurOf(Tseg#1) , (v#1_ed−v#1_st))	N/A	URLt1	—	—
···	···	···	···	···	···	···
Tseg#s	TEXT	Max(DurOf(Tseg#s) ,(v#s_ed−v#s_st))	N/A	URLts	—	—
OTHERS	···	···	···	···	···	···

FIG. 11

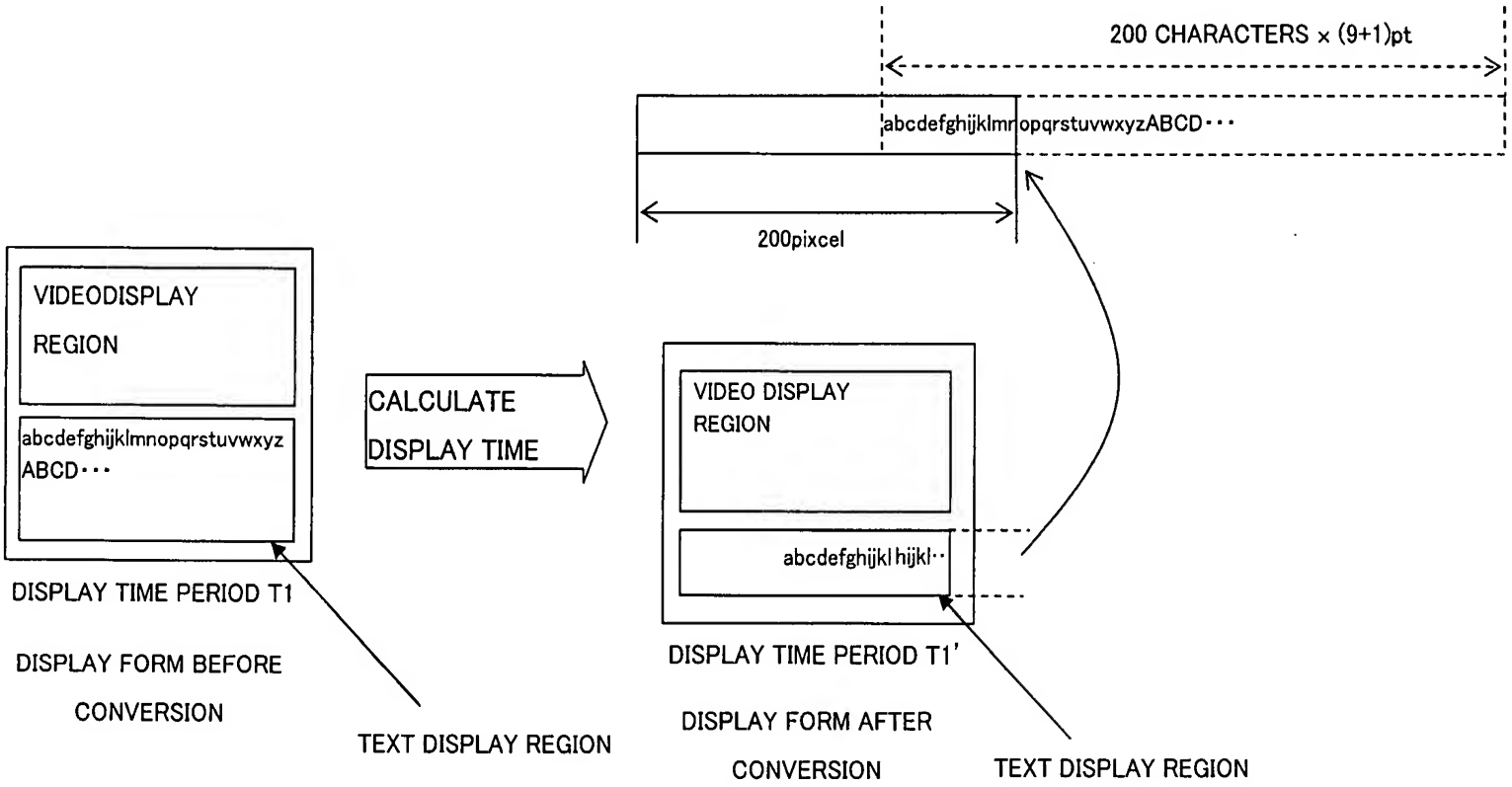

200 CHARACTERS x (9+1)pt
abcdefghijklmnopqrstuvwxyzABCD・・・
200pixcel
VIDEODISPLAY
REGION
abcdefghijklmnopqrstuvwxyz
ABCD・・・
CALCULATE
DISPLAY TIME
VIDEO DISPLAY
REGION
abcdefghijkl hijkl・・
DISPLAY TIME PERIOD T1
DISPLAY FORM BEFORE
CONVERSION
TEXT DISPLAY REGION
DISPLAY TIME PERIOD T1'
DISPLAY FORM AFTER
CONVERSION
TEXT DISPLAY REGION

FIG. 12

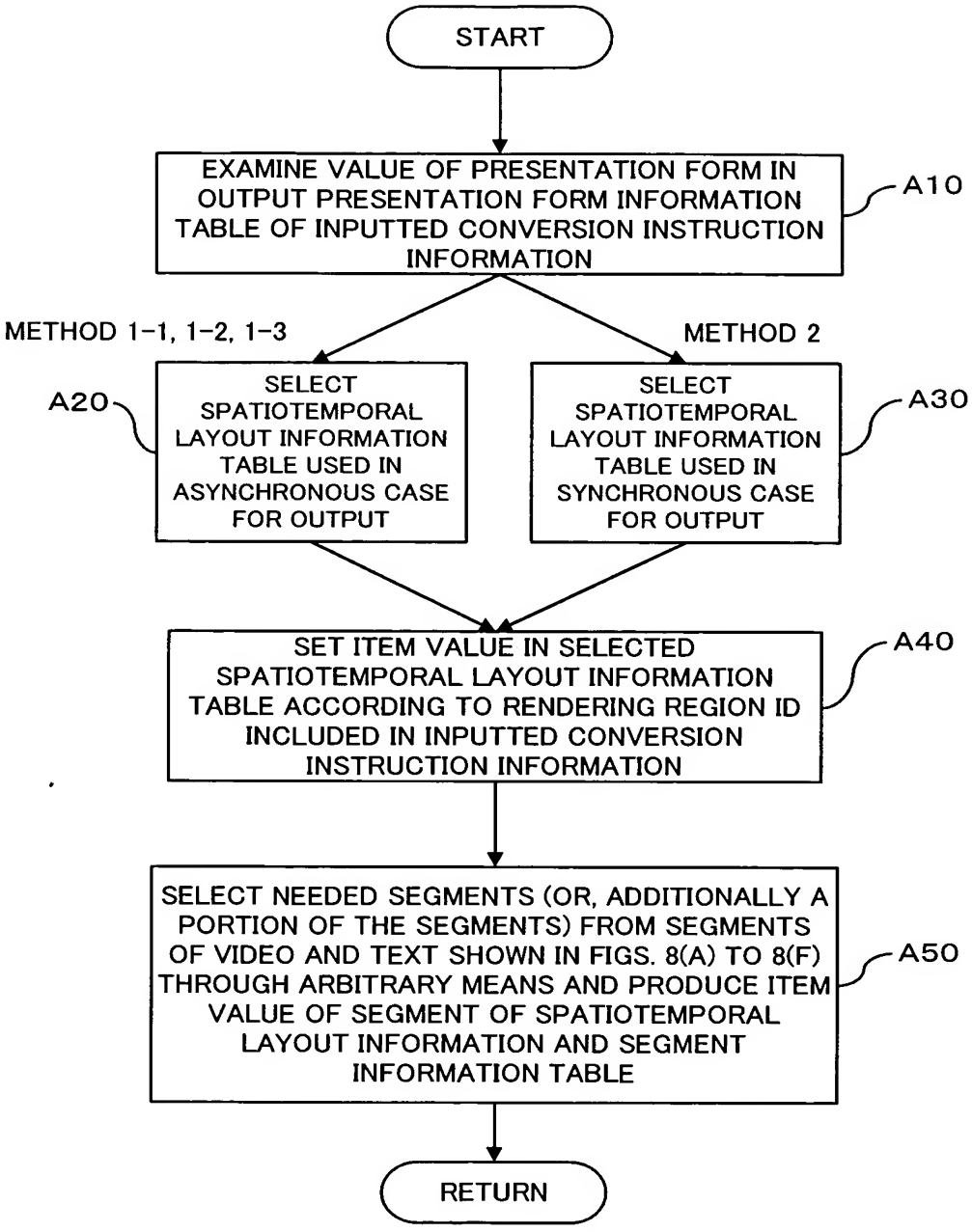

START
EXAMINE VALUE OF PRESENTATION FORM IN OUTPUT PRESENTATION FORM INFORMATION TABLE OF INPUTTED CONVERSION INSTRUCTION INFORMATION
A10
METHOD 1-1, 1-2, 1-3
METHOD 2
A20
SELECT SPATIOTEMPORAL LAYOUT INFORMATION TABLE USED IN ASYNCHRONOUS CASE FOR OUTPUT
SELECT SPATIOTEMPORAL LAYOUT INFORMATION TABLE USED IN SYNCHRONOUS CASE FOR OUTPUT
A30
SET ITEM VALUE IN SELECTED SPATIOTEMPORAL LAYOUT INFORMATION TABLE ACCORDING TO RENDERING REGION ID INCLUDED IN INPUTTED CONVERSION INSTRUCTION INFORMATION
A40
SELECT NEEDED SEGMENTS (OR, ADDITIONALLY A PORTION OF THE SEGMENTS) FROM SEGMENTS OF VIDEO AND TEXT SHOWN IN FIGS. 8(A) TO 8(F) THROUGH ARBITRARY MEANS AND PRODUCE ITEM VALUE OF SEGMENT OF SPATIOTEMPORAL LAYOUT INFORMATION AND SEGMENT INFORMATION TABLE
A50
RETURN

FIG. 13

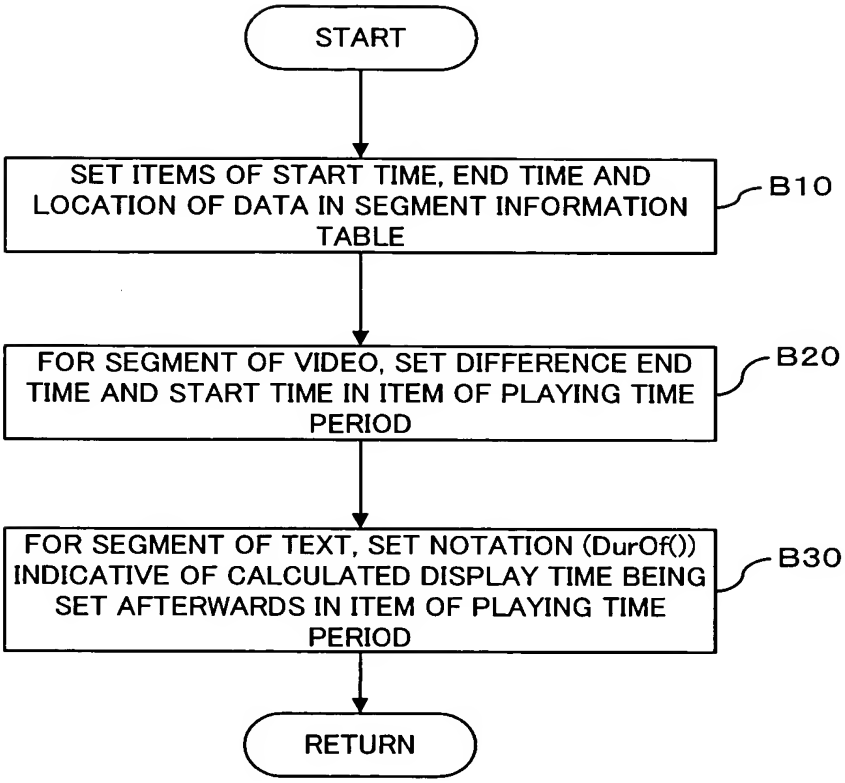
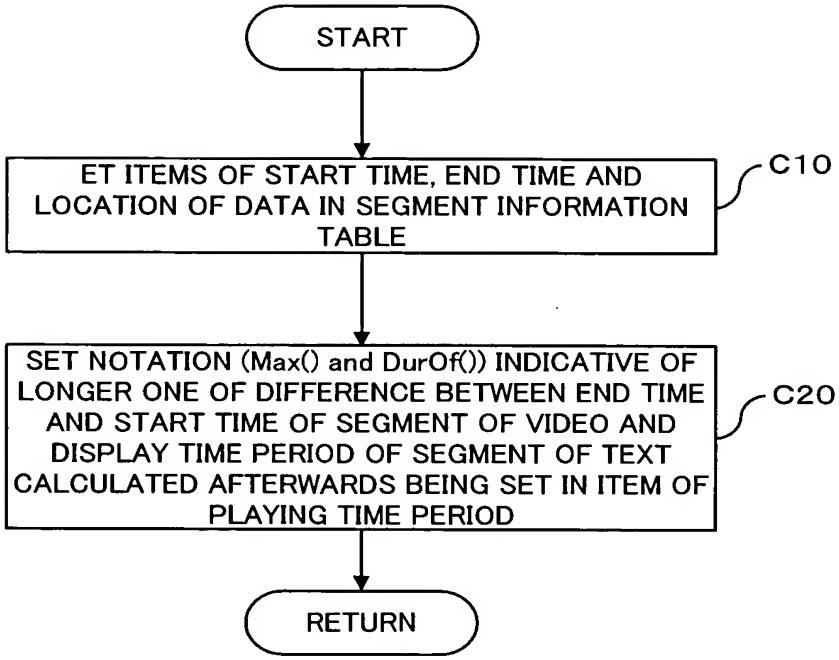

START
SET ITEMS OF START TIME, END TIME AND LOCATION OF DATA IN SEGMENT INFORMATION TABLE
B10
FOR SEGMENT OF VIDEO, SET DIFFERENCE END TIME AND START TIME IN ITEM OF PLAYING TIME PERIOD
B20
FOR SEGMENT OF TEXT, SET NOTATION (DurOf()) INDICATIVE OF CALCULATED DISPLAY TIME BEING SET AFTERWARDS IN ITEM OF PLAYING TIME PERIOD
B30
RETURN

FIG. 14


START
ET ITEMS OF START TIME, END TIME AND LOCATION OF DATA IN SEGMENT INFORMATION TABLE
C10
SET NOTATION (Max() and DurOf()) INDICATIVE OF LONGER ONE OF DIFFERENCE BETWEEN END TIME AND START TIME OF SEGMENT OF VIDEO AND DISPLAY TIME PERIOD OF SEGMENT OF TEXT CALCULATED AFTERWARDS BEING SET IN ITEM OF PLAYING TIME PERIOD
C20
RETURN

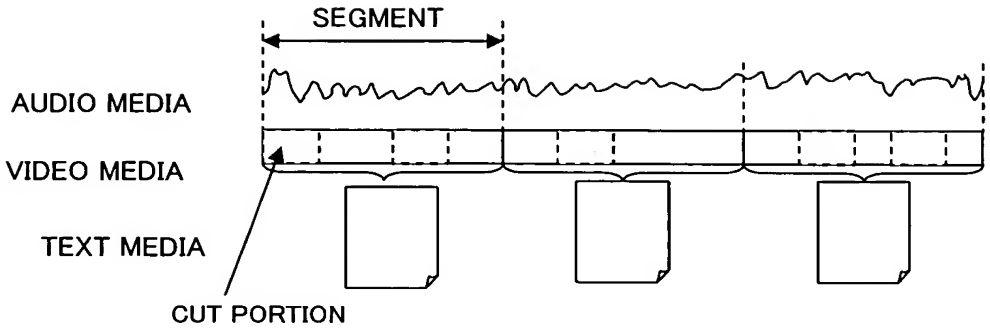



FIG. 15